

APPLICATION  
FOR  
UNITED STATES PATENT

TITLE OF INVENTION

**TIP RESISTANT WET/DRY VACUUM**

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Atty. Dkt. No.: 105129-3

EXPRESS MAIL NO.: EV324848148US  
Date of Mailing: October 16, 2003

## TIP RESISTANT WET/DRY VACUUM

### FIELD OF THE INVENTION

[0001] The present invention relates to a tip resistant wet/dry vacuum, and in particular to a tip-resistant vacuum and a kit for modifying a vacuum to prevent tipping.

### BACKGROUND OF THE INVENTION

[0002] Wet/dry vacuum cleaners typically include an upright cylindrical housing having an upper portion that contains the power head or motor assembly for generating suction, and a lower portion or canister for collecting debris and water. The power head is positioned at the top of the canister to allow a suction force to be create within the canister, while preventing water and/or debris collected in the lower portion of the housing from interfering with and possibly causing damage to the motor assembly. Existing wet/dry vacuum cleaners also include a hose or other device for directing the suctioning force of the motor assembly to collect and deliver debris to the canister. Like the motor assembly, the hose must be connected to the top of the lower portion or to the upper portion of the housing to prevent water and/or debris from interfering with the suctioning force.

[0003] Such a configuration can disadvantageously result in tipping of the vacuum for several reasons. Since the power head on the vacuum contains the motor, fan, and other components for creating suction, the typical wet/dry vacuum is extremely top heavy. This top heavy condition may become less sever as debris is collected, however most canisters continue to remain unstable even with the heaviest loads. Most wet/dry vacuums include casters or wheels to facilitate movement of the vacuum cleaner. As a result, most users will pull on the hose, rather than the vacuum cleaner, to move the vacuum around a room. Since the pulling force is being applied at the top of the unit, tipping of the vacuum can easily occur when the canister is empty or when the casters are unable to roll as a result of a blockage, such as cord interference.

[0004] Accordingly, there remains a need for an improved wet/dry vacuum that is tip resistant.

## SUMMARY OF THE INVENTION

[0005] The present invention generally provides a tip resistant wet/dry vacuum that includes a housing having an upper portion containing a motor assembly for creating a suction force within the housing, and a lower portion having a collection tank adapted to retain fluid and/or debris therein. The lower portion includes a top end, a bottom end, and a sidewall extending therebetween. At least one caster is mated to the lower portion of the housing to allow rolling movement of the housing. The vacuum further includes a hose that is coupled to the sidewall adjacent the bottom end of the lower portion of the housing such that a pulling force applied to the hose will be transferred to the bottom end of the lower portion of the housing to prevent tipping of the housing. The hose further includes an outlet adapted to deposit fluid and/or debris adjacent to the top end of the lower portion of the housing wherein the fluid and/or debris is collected in the collection tank.

[0006] In one embodiment, the outlet of the hose can be coupled to a port formed in the sidewall adjacent to the top end of the lower portion of the housing and in communication with the collection tank, and a portion of the hose can be connected to the sidewall adjacent to the bottom end of the lower portion of the housing. The vacuum can also include a mating element for mating a portion of the hose to the sidewall adjacent to the bottom end of the lower portion of the housing. The mating element can optionally be removably matable to the sidewall of the housing. Suitable examples of mating elements for use with the present invention include a clip, a cord, a bracket, a strap, a tab, and a fastener.

[0007] In another embodiment, the outlet of the hose can be coupled to a port formed in the sidewall adjacent the bottom end of the lower portion of the housing. An extension hose is preferably disposed within the lower portion of the housing, and it includes a first end coupled to the port and a second end disposed adjacent the top end of the lower portion of the housing for delivering fluid and/or debris to the collection tank. A mating element, such as an L- or U-shaped connector, a clip, a bracket, a cord, a strap, a tab, and a fastener, can be provided for mating a portion of the second end of the extension hose to an internal surface of the sidewall adjacent the top end of the lower portion of the housing.

[0008] The present invention also provides a kit for creating a tip-resistant wet/dry vacuum. The kit preferably includes a connector member having a first end adapted to mate to a hose on a wet/dry vacuum, and a second end adapted to mate to an extension hose. The connector member is preferably configured to be disposed within an opening formed in a sidewall of a wet/dry vacuum. The kit also includes an extension hose having a first end adapted to mate to the second end of the connector member, and a second, open end for delivering fluid and/or debris to a collection chamber formed in a wet/dry vacuum. A mating element can be provided for mating a portion of the second end of the extension hose to an inner sidewall of a housing in a wet/dry vacuum to allow fluid and/or debris to be delivered to the collection chamber in the wet/dry vacuum. The mating element can be, for example, an L- or U-shaped connector, a clip, a bracket, a cord, a strap, a tab, and a fastener. In another embodiment, rather than including an extension hose, the kit can include a housing having a lumen extending therethrough, and the mating element can be effective to mate the housing to an inner or outer sidewall of an existing wet/dry vacuum. The kit can also optionally include a sealing member, such as a cap, that is adapted to seal an existing inlet port on a wet/dry vacuum.

#### BRIEF DESCRIPTION OF THE DRAWINGS

[0009] The invention will be more fully understood from the following detailed description taken in conjunction with the accompanying drawings, in which:

[0010] FIG. 1 is side view of one embodiment of a wet/dry vacuum according to the present invention;

[0011] FIG. 2 is a cross-sectional view of another embodiment of a wet/dry vacuum having an extension hose disposed therein and coupled to a side wall of the vacuum by a clip member;

[0012] FIG. 3 is a cross-sectional view of yet another embodiment of a wet/dry vacuum having an extension hose disposed therein and coupled to a side wall of the vacuum by an L-shaped connector; and

[0013] FIG. 4 is a side view of a wet/dry vacuum according yet another embodiment of the present invention.

#### DETAILED DESCRIPTION OF THE INVENTION

[0014] The present invention provides a wet/dry vacuum cleaner having, or a kit for modifying an existing wet/dry vacuum to have, a hose that is connected to a sidewall of the vacuum adjacent to a bottom end of the vacuum such that a pulling force applied to the hose will be applied to the bottom portion of the vacuum, thereby preventing the vacuum from tipping over during use as the unit is pulled around an area using the hose. As an initial matter, it is worth noting that although an exemplary embodiment of a vacuum cleaner will be described in some detail, the collection tank, motor assembly, casters, and other components are not essential to the invention and these components are merely described for illustration purposes. Thus, a person skilled in the art will appreciate that the vacuum can have virtually any configuration, shape, and it can include a variety of components and features known in the art.

[0015] FIG. 1 illustrates one embodiment of a wet/dry vacuum for use with the present invention. As shown, the vacuum cleaner 10 is generally in the form of a housing having an upright, generally cylindrical shape, and that includes an upper portion 10a and a lower portion 10b. The upper portion 10a contains the motor assembly 14 for creating a suction force within the housing, and the lower portion 10b includes a collection tank 12 for collecting fluid and/or debris. The upper portion 10a of the housing is also preferably removably attached to the lower portion 10b of the housing to allow the fluid and/or debris to be emptied from the tank 12.

[0016] The motor assembly 14 in the upper portion 10a of the housing can have virtually any configuration, and a variety of motor assemblies 14 are known in the art and can be used with the present invention. A typical motor assembly 14 includes a power head, which contains the motor, fan, an other components for creating a vacuum force within the tank 12. A power cord 15 is connected to the motor assembly 14 for supplying power to the motor assembly 14. The motor assembly 14 also preferably includes an automatic shut-off valve (not shown) that is effective to deactivate the motor when the vacuum 10 tips over. This feature is generally

required with wet/dry vacuums to prevent fluid and/or debris from interfering with or causing damage to the motor assembly 14. Moreover, most wet/dry vacuums require a floating ball or other device that is effective to shut off the motor assembly 14 when the collection tank 12 is full. This mechanism will also prevent fluid and/or debris from interfering with the delivery of fluid and/or debris from the hose 16 to the collection tank 12.

[0017] The lower portion 10b of the housing can also have a variety of configurations, but in general it includes a top end 12a and a bottom end 12b that extends between a sidewall which forms the collection tank 12 for collecting fluid and/or debris. A hose 16 is coupled to an outlet 20 that is formed in the sidewall of the housing, and it is in communication with the tank 12. The hose 16 can have virtually any configuration, but in general it includes an inlet end 16a for receiving fluid and/or debris, and an outlet end 16b for delivering the fluid and/or debris to the collection tank 12. A person skilled in the art will appreciate that the hose 16 can have any configuration, and it can be formed from one or more lengths of hoses that are connected to one another. Moreover, the term “hose” is also intended to include a variety of detachable and interchangeable nozzles and hoses that can be attached to either the inlet end 16a of the hose 16 or to the outlet 20 formed in the lower portion 10b of the housing. The lower portion 10b of the housing also preferably includes one or more casters or wheels 18 coupled thereto, and preferably mated to the bottom end 12b of the housing, for allowing the vacuum 10 to roll during use.

[0018] As is further illustrated in FIG. 1, the hose 16 of the vacuum 10 of the present invention is coupled to the lower portion 10b of the housing at or near the bottom end 12b of the vacuum 10, unlike prior art vacuums which have a hose that is connected to the sidewall near the top end 12a of the lower portion 10b of the unit. The attachment of the hose 16 at or near the bottom end 12b of the unit allows a user to pull on the hose 16 to move the vacuum 10 around an area without causing the vacuum 10 to tip over. In particular, since the pulling force is applied to the bottom end 12b of the unit near the casters 18, the casters 18 will roll or be pulled over any objects that might interfere with movement of the vacuum. In an exemplary embodiment, the hose 16 also preferably includes a catch member, such as a pin or latch, that is effective to removably engage the hose 16 to the outlet 20. The catch member is particularly advantageous

in that it will prevent the hose 16 from becoming detached from the outlet during use of the vacuum 10.

[0019] In order to provide a hose 16 that is coupled near the bottom end 12b of the vacuum 10, the vacuum 10 must be adapted such that the fluid and/or debris is still deposited into the tank 12 adjacent to the top end 12a of the lower portion 10b of the housing. This is necessary in order to prevent the fluid and/or debris from interfering with the suction force created by the motor assembly 14 and applied to the hose 16. Accordingly, the present invention provides several exemplary techniques for depositing fluid and/or debris adjacent to the top end 12a of the lower portion 10b of the housing, while allowing at least a portion of the hose 16 to remain connected to the lower portion 10b of the housing adjacent to the bottom end 12b to prevent tipping of the vacuum 10 during use. While virtually any technique can be used to redirect debris from the bottom end 12b of the lower portion 10b of the housing to the top end 12a of the lower portion 10b of the housing, FIGS. 2 and 3 illustrate exemplary embodiments of such a technique. For convenience, like reference numbers are used to refer to like parts.

[0020] As shown in FIGS. 2 and 3, an extension hose 117, 217 is provided having an inlet end 117a, 217a that is coupled to the outlet port 120, 220 in the housing, and an outlet end 117b, 217b that is coupled to an internal surface of the lower portion 110b, 210b of the housing adjacent to the top end 112a, 212a of the housing. In an exemplary embodiment, the extension hose 117, 217 is fluid-tight to prevent the collection of fluid in the hose 117, 217 near the outlet 120, 220 in the housing. A variety of techniques and mating elements can be used to connect the outlet end 117b, 217b to the inner sidewall of the lower portion 110b, 210b of the housing.

[0021] In the embodiment shown in FIG. 2, a portion of the extension hose 117 is coupled to an L-shaped connector or bracket 124 that is mounted on the inner sidewall near the top end 112a, 212a of the lower portion 110b, 210b of the housing. The connector 124 can have a variety of configurations, but preferably it is in the form of a housing having an L-shaped lumen extending therethrough. The connector 124, which is preferably fixedly attached to the inner sidewall, can slidably receive a portion of the hose 117 to essentially change the direction of the hose 117 so that the outlet end 117b of the hose 117 is directed into the collection tank 112. Alternatively,

the connector 124 can mate to the hose 117 to allow fluid and/or debris flowing through the hose to be received by the connector 124 and directed toward the collection tank 112.

[0022] In an alternative embodiment, shown in FIG. 3, the extension hose 217 can be connected to the sidewall of the lower portion 210b of the housing, adjacent to the top end 112a, 212a of the housing, using a clip 222 or similar mating element. The clip 222 can have virtually any configuration, but in general it should extend around the extension hose 217 without compressing the hose 217. By way of non-limiting example, the clip 222 can be a strap or band having opposed ends that mate to the housing, or a ring-shaped member that is connected to the housing and that is disposed around the hose 217. Other suitable mating elements include, for example, a cord, a bracket, a fastener, a strap, a tab, etc.

[0023] A person skilled in the art will appreciate that, while the hose in each of FIGS. 2 and 3 is shown extending directly upwards from the bottom end of the sidewall of the lower portion of the housing, the hose can optionally extend around all or a portion of the inner sidewall of the housing and it can connect to any portion of the top end of the sidewall of the housing. This is particularly effective in that it will allow fluid and/or debris to flow more freely through the hose. A person skilled in the art will also appreciate that a variety of other techniques can be used to attach the extension hose 117, 217 to the lower portion 10b of the housing, or to otherwise redirect fluid and/or debris from the outlet 20, 120, 220 in the housing such that the fluid and/or debris is deposited into the tank 12, 112, 212 adjacent to the top end 12a, 112a, 212a of the lower portion 10b, 110b, 210b of the housing. By way of non-limiting example, the extension hose can be in the form of a housing having a lumen extending therethrough for redirecting fluid and/or debris. Alternatively, an extension lumen can be formed in the sidewall of the housing for redirecting fluid.

[0024] In another embodiment of the present invention, the extension hose 117, 217, and clip 222, L-shaped bracket 124, or other mating element, can be provided as a kit to allow a person to modify an existing wet/dry vacuum to provide a tip-resistant wet/dry vacuum. In an exemplary embodiment, the kit preferably includes a connector member (not shown), similar to outlets 20, 120, and 220 shown in FIGS. 1-3, which can be used to form a new outlet in the lower portion of



the housing of an existing vacuum adjacent to the bottom of the unit. The connector member is preferably a ring-shaped member having a first end that is adapted to mate to a hose of a wet/dry vacuum, and a second end that is adapted to mate to an extension hose. Since the outlet on existing wet/dry vacuums is located near the top end of the lower portion of the vacuum unit, an opening can be cut into the sidewall of the lower portion of the vacuum adjacent to the bottom end of the unit for receiving the connector member. The kit can also include an extension hose 117, 217 having a first end 117a, 217a that is adapted to mate to the connector member, and a second, open end 117b, 217b for delivering fluid and/or debris to the collection tank formed in the wet/dry vacuum. The kit can also include a mating element, such as L-shaped bracket 124 or clip 222, that is adapted to mate a portion of the extension hose 117, 217 to an inner sidewall of the lower portion of the housing adjacent to the top end of the lower portion of the housing. The kit can also optionally include a sealing member, such as a cap, that is adapted to seal the original outlet port in the vacuum.

[0025] A person skilled in the art will appreciate that the kit can include a variety of components not shown or described herein, as long as the components are effective to allow an existing wet/dry vacuum to be modified such that the pulling force applied to the hose will be transferred to the bottom end of the housing. By way of non-limiting example, the kit can include a housing that is adapted to mate to an outer or inner surface of an existing wet/dry vacuum, and that includes a lumen extending therethrough that is effective to direct debris from a hose connected to the bottom end of the housing to the top end of the housing for delivery into the collection tank.

[0026] FIG. 4 illustrates yet another embodiment of a tip-resistant wet/dry vacuum 310. The vacuum 310 is similar to vacuum 10 shown in FIG. 1, thus like reference numbers are used to refer to like parts. In this embodiment, the vacuum 310 is a standard prior art vacuum that is modified in accordance with the present invention to provide a tip-resistant wet/dry vacuum. A person skilled in the art will appreciate that the components used to modify the vacuum can be provided as a kit, or alternatively they can be built into a new vacuum cleaner.

[0027] As shown, the vacuum 310 generally includes an upper portion 310a that contains a motor assembly 314, and a lower portion 310b that includes a collection tank 312, and one or more casters or wheels 318 disposed under the lower portion 310b. An outlet port 320 is formed in the lower portion 310b of the housing and it is in communication with the collection tank 312 and with the motor assembly 314 such that the motor assembly 314 is effective to create a suction force within the collection tank 312 and a hose 316 coupled to the outlet port 320. The outlet port 320, rather than being positioned adjacent to the bottom of the lower portion 310b of the unit, is formed at the top end 312a of the lower portion 310b of the housing, as is standard on existing wet/dry vacuums. Unlike prior art vacuums, however, a clip 322, similar to clip 222 shown in FIG. 3, is provided for attaching a portion of the hose 316 near the bottom end 312b of the lower portion 310b of the housing. This will allow the vacuum 310 to be pulled using the hose 316 without causing the vacuum to tip over. In particular, the pulling force applied to the hose 316 will be transferred to the lower portion 310b of the housing, thus causing the casters 318 to roll over any objects that might interfere with movement of the vacuum 310.

[0028] The clip 322 can have virtually any configuration, but like clip 222 shown in FIG. 3, it should be effective to attach the hose 316 to the housing without compressing the hose 316, e.g., without interfering with the flow of fluid and/or debris through the hose 316. By way of non-limiting example, the clip 322 can be a substantially rigid or semi-rigid ring-shaped member that fits around the hose 316 and that includes one side that can be fixedly attached to the side of the vacuum 310. The clip 322 is also preferably adapted to retain the hose 316 such that the hose 316 is not slidably movable with respect to the clip 322. This will retain the pulling force at the base of the unit, rather than allowing the pulling force to be transferred to the outlet 320 of the housing. Other suitable mating elements that can be used include, for example, fasteners, straps, tabs, cords, brackets, etc.

[0029] A person skilled in the art will appreciate that a variety of other techniques can be used to provide a wet/dry vacuum wherein the pulling force applied to the hose will be transferred to the base of the unit, rather than to the upper portion of the housing, as is done in existing wet/dry vacuums. By way of non-limiting example, a cord can be provided and attached to a portion of the hose. The opposed end of the cord can then be attached to the base of the unit such that the

length of the cord extending between the hose and the vacuum is shorter than the length of the hose extending from the attachment point of the cord to the vacuum. As a result, when a pulling force is applied to the hose, the cord, rather than portion of the hose attached to the vacuum, will receive the pulling force. The force will thus be applied to the base of the unit, thereby preventing the unit from tipping over as the vacuum is pulled around an area using the hose.

[0001] One skilled in the art will appreciate further features and advantages of the invention based on the above-described embodiments. Accordingly, the invention is not to be limited by what has been particularly shown and described, except as indicated by the appended claims.

What is claimed is: